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DENTAL  
QUESTIONS AND ANSWERS.

BY

GUSTAVUS NORTH, A. M., D. D., S.

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# QUESTIONS AND ANSWERS

—ON—

## Dental Pathology, <sup>and</sup> Therapeutics,

DENTAL EMBRYOLOGY, HYGIENE,

—AND—

## Care & Children's Teeth

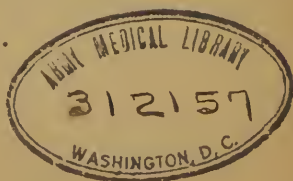
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U. S. DENTAL COLLEGE,

1891.



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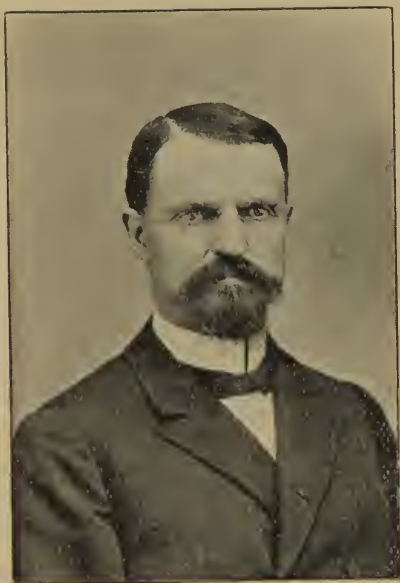
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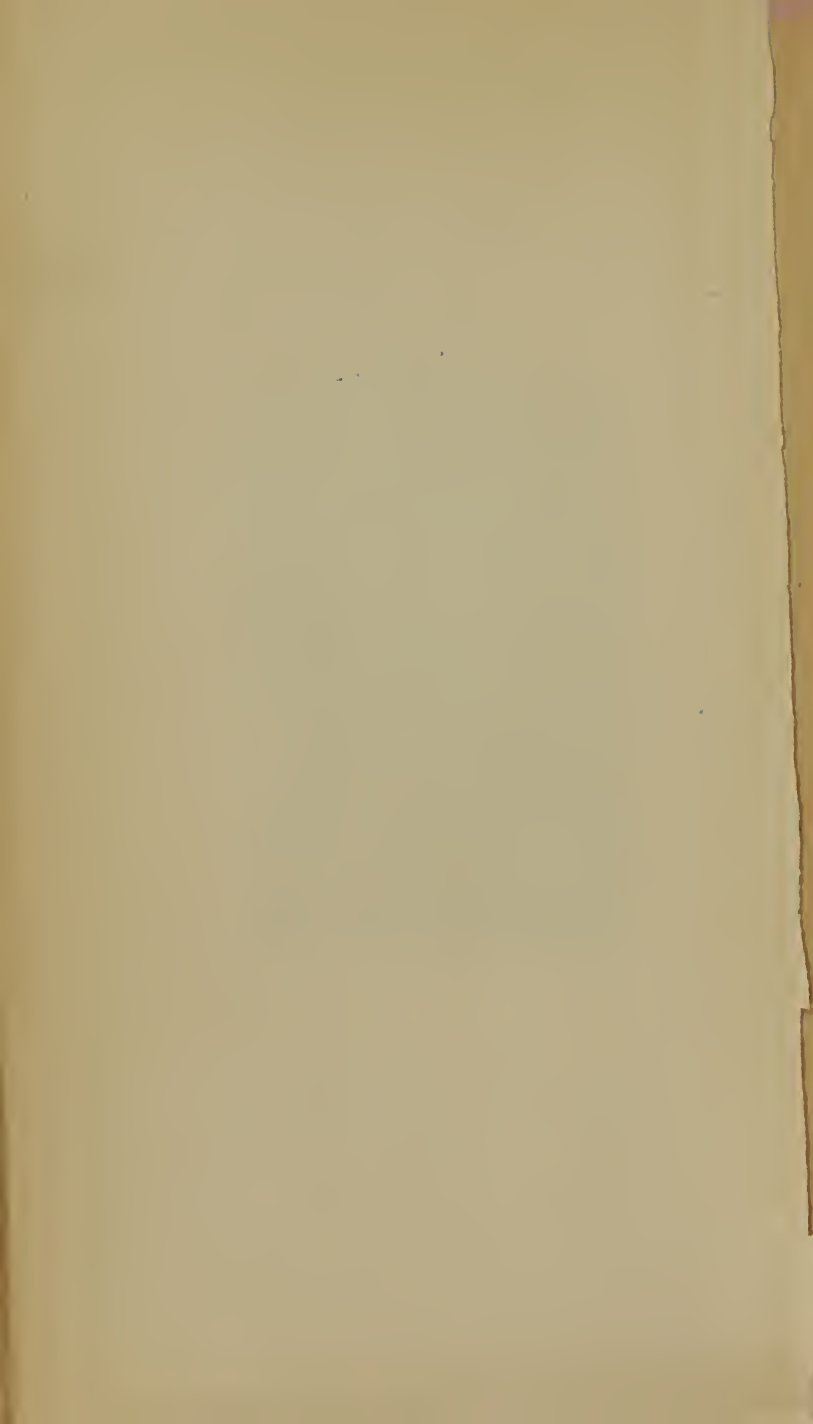
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DEDICATED

TO THE BROTHER OF THE AUTHOR,  
PROF. JOHN NORTH, A. M., M. D., PH. C.,  
F. S. SC. LONDON.  
OF TOLEDO, OHIO.



*Gustavus North, V. V. S.*





## PREFACE.

This book will include the outlines of the questions and answers of about fifty lectures delivered by the author, on Dental Pathology and Therapeutics, Dental Embryology, Hygiene and Care of Children's Teeth.

This work has been prepared especially for students, and the questions and answers are plain and to the point.

We are indebted to PROF. J. FOSTER FLAGG, D. D. S., for some valuable points from his book of questions and answers on Dental Pathology and Therapeutics.

We are also indebted to PROF. JOHN NORTH, M. D., for his valuable assistance.

GUSTAVUS NORTH,

Eighth month, 1891.

Springville, Iowa.

DE GUSTAVUS NORTH,  
1891-1896.

PART I.  
HYGIENE.

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PART II.  
DENTAL EMBRYOLOGY.

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PART III.  
Dental Pathology, and Thera-  
peutics, Care of Children's  
Teeth and Miscellane-  
ous Questions.

## PART I.

### HYGIENE.

1.—What is hygiene?

A.—The art of preserving health.

2.—What is dental hygiene?

A.—The art of preserving the teeth and surrounding parts.

3.—What is health?

A.—Health is the state of being free from physical pain or disease.

4.—What are the three marked periods of growth?

A.—Infancy, youth and maturity.

5.—What is the tendency of nutrition in these different periods?

A.—In youth the tendency of development is the greatest; in middle age more easily balanced, and in old age the tendency is to waste away.

6.—What is ventilation?

A.—Ventilation is removing impure air from a room and adding fresh air in its stead.

7.—Of what is air chiefly composed?

A.—Oxygen, nitrogen, carbon dioxide and vapor of water.

8.—What proportion of oxygen and nitrogen?

A.—Oxygen about one-fifth; nitrogen about four-fifths.

9.—Is the air affected or changed by respiration?

A.—Yes.

10.—Is the quantity of oxygen in the air increased or diminished by respiration?

A.—It is diminished.

11.—Is the quantity of nitrogen in the air affected by respiration?

A.—Nitrogen is nearly the same in the expired as in the inspired air.

12.—About how many cubic feet of air will an individual inhale in twenty-four hours?

A.—About three hundred and sixty cubic feet.

13.—How is the air changed by respiration?

A.—The quantity of oxygen is diminished and the amount of carbon dioxide increased.

14.—How should sleeping rooms be ventilated?

A.—They should be arranged so that the air in the morning will be as pure as when retiring; a person should not sleep in a draft, but should have pure air; a window should be both raised and lowered.

15.—What are the general effects of improper ventilation?

A.—Headache, loss of appetite, general debility.

16.—Are house plants injurious to health?

A.—No, only as improper ventilation results by too closely guarding the plants during cold seasons.

17.—What is the most important physical point to observe in life?

A.—Health.

18.—What is the next most important point in life?

A.—Education.

19.—What is understood by the term intemperance?

A.—Intemperance means excess; it means more than the excess of alcoholic drinks. Intemperance in its full sense, means want of moderation, excess, in any kind of action or indulgence of body or mind; or any indulgence of appetite or passion which is injurious to the person or contrary to morality.

20.—What influence will unnecessary stimulants have on an individual?

A.—It involves a waste of force.

21.—Are tea, coffee, hot lemonade, etc., stimulants?

A.—Yes, to a certain degree.

22.—Will a growing lad require more air than an adult?

A.—Yes, because he consumes more food in proportion to his weight.

23.—Does a large person require more air than one of smaller size?

A.—Yes, on account of having a greater amount of circulating fluid.

24.—Why are children often troubled with diarrhœa during hot seasons?

A.—On account of improper ventilation and improper food. Foul or impure air in hot seasons is well known to be injurious to the digestive organs by reason of their sensitiveness. Heat does not produce diarrhœa with pure, dry air, even during extremely hot seasons, but with moderate heat where perfect circulation of air is prevented, and the rules of hygiene ignored, sickness will follow. "Cleanliness is next to Godliness."

25.—How should we proceed to improve a child's health?

A.—By sun baths, plenty of pure air, and food that will have a tendency to build up the system.

26.—What food has a tendency to build up the system?

A.—Meats, milk, vegetables, graham bread, and fruit in season.

27.—What food is detrimental to the system, especially that of the child?

A.—Pies, cakes, candies and all sweet-meats.

28.—Why are piece-meals a disadvantage to children?

A.—On account of generally lunching on sweet-meats, and when good, wholesome food is prepared at regular meals, they do not relish it.

29.—What is the cause of so many feeble mothers?

A.—Lack of proper judgment and proper nutrition.

30.—Does bread made from bolted wheat flour contain all the nutritive properties of the wheat?

A.—No, fine wheat flour is about seventy-five per cent. starch; a bushel of wheat weighs sixty pounds and forty pounds of superfine flour is made from this. The twenty pounds which contains the most nutritious part of the wheat is taken out for cattle food. Therefore bread made from fine wheat flour contains but little phosphate.

31.—What amount of phosphate does a mother require daily while nursing her child?

A.—The amount varies according to size and condition of the individual; from seventy-five to eighty grains of phosphate daily. Fifty to sixty grains of this is to supply waste, and the remainder to build up the osseous structure of the child.

32.—What influence will over taxing the mental faculties or over work have on the child?

A.—Where the mental faculties are over taxed it has an injurious effect, causing loss of appetite and general debility. Over work checks development and stunts the growth.

33.—What is the cause of so much deficiency in children's teeth? \*

A.—Improper diet and care.

\* See Appendix.

34.—When is the proper time to build up the child's system?

A.—During embryonic life and childhood.

35.—Can the teeth and osseous structure be built up and improved during childhood?

A.—Yes, by following the rules of hygiene.

36.—What should the mother guard against during the time she is nursing her child?

A.—She should avoid over-heating or over-taxing her system. A child should not receive nourishment from the mother while she is in a heated or an exhausted condition.

37.—Should a mother nurse her child?

A.—Yes, if her system is in a normal condition.

38.—Where a child is raised on cow's milk, should the milk of more than one cow be used?

A.—Generally from two or more cows; the milk will not vary in quality or standard as much as from one cow.

39.—What is one of the great objections to raising a child with the bottle?

A.—On account of neglecting to keep the bottle and rubber tubing in a clean and perfect condition. The bottle and outfit should be thoroughly cleansed after each time of use; the child should never have milk that has stood in the bottle any length of time; it should be refilled with pure milk every time the child is fed.



40.—What should be the principle diet during pregnancy?

A.—Food that will build up the system; that contains phosphates, such as beef, milk, vegetables, graham bread, etc.

41.—Are ripe fruits an advantage or disadvantage during pregnancy.

A.—Ripe fruits are generally an advantage. Let the mother have what the system craves.

42. Is consumption hereditary?

A.—Consumption is not hereditary, but the physical condition favorable to the development of consumption is hereditary. Families with this condition are more liable to take consumption when the tuberculous bacilli comes in contact with the lungs.

43.—Is consumption contagious?

A.—Consumption is supposed to be contagious; true consumption can only come from tuberculous bacilli.



## PART II.

### DENTAL EMBRYOLOGY.

44.—What is embryology?

A.—A description of the embryo.

45.—What is dental embryology?

A.—A description of the formation of the teeth and surrounding parts.

46.—At what time of embryonic life do the deciduous teeth commence to form?

A.—From the sixth to eighth week of intra-uterine existence.

47.—Will the condition of the deciduous teeth have any influence upon the permanent ones?

A.—If the deciduous teeth have been deprived of proper nutrition, and are poor in structure, and the system in a similar condition during the formation and development of the permanent teeth, they will be similar in structure to the deciduous teeth. But the permanent teeth can be greatly improved by hygienic methods.

48.—Will eruptive diseases have an ill effect on the enamel organ of the deciduous teeth?

A.—No.

49.—Why not?

A.—Because calcification has so far advanced at the time of birth that eruptive diseases will have no influence on the deciduous teeth.

50.—At what period of embryonic life does calcification of the deciduous teeth commence?

A.—About the seventeenth week of embryonal existence?

51.—At what period of childhood is calcification of the deciduous teeth completed? \*

A.—About the <sup>20<sup>th</sup></sup> twelfth month.

52.—What is understood by calcification?

A.—The process of changing into a bony or hard substance, containing lime, as in the formation of the teeth.

53.—Where do the teeth first commence to calcify?

A.—On the cutting edge of the incisors and cuspids, and the grinding surfaces of the bicuspids and molars.

54.—What is understood by decalcification?

A.—The removal of calcarious matter; to take up or remove the lime salts and leave only the gelatine.

55.—At what period does decalcification of the teeth commence?

A.—About the fourth year. The central incisors are the first to commence to decalcify.

56.—Which are the last teeth to commence to decalcify, and at what period?

A.—The cuspids are the last teeth to decalcify, they commence about the ninth year.

57.—After a deciduous tooth commences to decalcify how long does it take to absorb the roots?

A.—After a tooth commences to decalcify it takes about three years to accomplish its work.

58.—Will eruptive diseases have any influence on the enamel organ of the permanent teeth?

A.—They frequently leave their mark, but it is owing to circumstances. Where the system has lacked nutrition at certain periods of childhood, eruptive diseases will have an influence on the enamel organ of the permanent teeth.

59.—At what period of childhood will eruptive diseases do the most harm?

A.—From the second to the sixth year.

60.—What diseases are the most destructive to the enamel organ?

A.—Scarlet fever, measles, small-pox, chicken-pox, etc., etc.

61.—In what condition do we find the teeth when affected by eruptive diseases?

A.—The enamel will have little pits and grooves upon the surface; enamel porous; teeth malformed, and often in a dwarfed condition. The author had a very marked case a short time since, in which every tooth was more or less affected by eruptive diseases, and the enamel in a porous and grooved condition; the teeth were stripped of their covering and the dentine largely exposed. This was the most marked case we have seen.

62.—Do eruptive diseases ever destroy a tooth-germ ? \*

A.—Yes, they oft times destroy the germs of the lateral incisors, and generally takes them in pairs. While nature is busily engaged in knitting the frail fabric that constitutes the teeth, especially the enamel organ, and is startled by the presence of one of the eruptive diseases, she is apt to drop a stitch, and often several, and when she takes up her work again, she never stops to gather up the dropped stitches or missing links, but leaves their mark through life.

63.—Where the permanent laterals fail to appear what treatment should follow ?

A.—Let nature have her course and she will endeavor to correct the deficiency, and the space will be equalized.

64.—What is the first formation of a tooth ?

A.—The enamel organ.

65.—At the period of formation of the deciduous teeth, is the structure composed of organic or inorganic matter ?

A.—Organic matter.

66.—What is the primitive dental groove ? \*

A.—It is a fold of the mucous membrane where the germs of the teeth are formed.

67.—What is a dental follicle ?

A.—A sac or bag where the enamel organ originates, enclosed by the mucous membrane.

68.—What is a dental papilla ?

A.—The tooth germ formed at the base of the follicle.

69.—Which are the first teeth formed in the primitive dental groove ?

A.—The germs of the first deciduous molars.

70.—At what period do the germs of the first deciduous molars make their appearance ?

A.—From the sixth to the seventh week of gestation.

71.—At what period of embryonal existence do the germs of the incisors make their appearance ?

A.—About the ninth week.

72.—Which are the first teeth formed, the central or lateral incisors ?

A.—The central incisors; the laterals follow about a week later.

73.—At what period of embryonal existence do the deciduous cuspids make their appearance ?

A.—About the eighth week.

74.—Which are the last teeth of the deciduous set to form ?

A.—The second molars.

75.—At what period of embryonic life does ossification of the jaw commence ?

A.—Slight traces of ossification are noticeable from the thirty-fifth to the fortieth day.

76.—What is considered the first solid structure of the lower jaw ?

A—Meckel's cartilage.

77—At what period of embryonal existence does Meckel's cartilage make its appearance?

A—About the twenty fifth day.

78—What is the object of this cartilage?

A—It acts as a support until osseous structure is formed.

79—How long does Meckel's cartilage remain as a support to the jaw?

A—It remains until the fifth or sixth month.

80—Is Meckel's cartilage an exclusive heritage of man?

A—No, all the different species of mammals, reptiles, fishes, birds, rats, mice, etc., have this cartilage.

81—Does this cartilage always disappear before birth as in the human fœtus?

A—No, in some of the rodent animals, as rats and mice for instance, it remains until after birth.

82—What is understood by the word rodent?

A—Gnawing animals.

83—What is understood by the word mammal?

A—An animal that suckles its young.

84—What is understood by the term embryo?

A—It means the fœtus before the fifth month of gestation.

85—What is understood by the word fœtal-life?

A—After the fifth month of gestation until birth.

86—Which of the cranial nerves is influenced by pregnancy?

A—The fifth pair of nerves.

87—Where a deficiency in formation is noticeable in the parents, will the same deficiency be traced in their offspring?

A—It frequently is, but not necessarily.

88—Where parents have strong marked features in regard to teeth, shape of arch, etc., will their offspring be marked similarly?

A—Their offspring will generally be marked with similar features.

89—What is the mucous membrane?

A—A membrane that lines the canals, cavities and hollow organs which communicate externally.

90—What is the mucous membrane of the mouth?

A—A membrane lining the mouth, palate, pharynx, etc.

91—How many layers of mucous membrane are there?

A—Four.



92—How many layers of mucous membrane connected with the development of the teeth ?

A—Three.

93—Name the different layers of the mucous membrane,

A—Epithelium, basement, corium and sub-mucous tissue.

94—Name the different layers of the mucous membrane connected with the development of the teeth.

A—Epithelium, basement and corium layers.

95—Name the external layer of the mucous membrane.

A—Epithelium.

96—Is the epithelium divided into strata ?

A—Yes, into two; corneous and malpighian.

97—What layer comes next to the epithelium ?

A—Basement membrane. It is a very thin layer, not recognized by some author's as a layer of mucous membrane, but to the dental student it is very important.

98—Why is the basement membrane considered an important layer to the dental student ?

A—Because the enamel organ is formed on the external surface, and the dentinal bulb or papilla is formed on the opposite surface.

99—What is the third layer of mucous membrane?

A—Corium.

100—Is the corium divided into strata?

A—Yes, into two; the papillary and reticular.

101—What is the fourth layer of mucous membrane?

A—Sub-mucous tissue.

102—Is the mucous membrane composed of cell structure?

A—Yes.

103—What is understood by lifeless cells or scales of the mucous membrane?

A—The cells composing the stratum corneous, the external layer or stratum of the mucous membrane.

104—What are infant cells?

A—The malpighian stratum of the epithelium is formed of living cells of various forms. The lower or columnar cells stand perpendicularly upon the basement membrane, and constitute the enamel organ. During the development of the teeth they are known as the enamel membrane; they are continually changing and being thrown off. They pass through several forms, such as polygonal, hexagonal, etc., and are finally cast off as lifeless scales.

DENTAL EMBRYOLOGY.

105—What is understood by polygonal cells?

A—Polygonal means having many angles; no particular number.

106—What is understood by hexagonal?

A—Having six sides or surfaces, as the hexagonal cells.

107—Where does the enamel organ originate?

A—From the malpighian lamina, or lower layer of the epithelium.

108—Where does the dentinal bulb or papilla originate?

A—From the external surface of the corium.

109—What is understood by the oral-epithelium?

A—Scarf skin or outer layer of the mucous membrane.

110—What is understood by the epithelial cord?

A—The membrane that incloses the follicle.

111—Name the origin of the epithelial cord of the deciduous teeth.

A—From the epithelial lamina.

112—Name the time of the appearance of the follicular wall.

A—About the tenth week.

113—At what time of embryonic life does the follicle close and the rupture of the epithelial cord occur?

A—About the fourth month.

\* See Appendix.

114—At what period does the dentinal cap first appear?

A—From the sixteenth to the seventeenth week of gestation.

115—Name the place of origin of the epithelial cord of the permanent incisors and cuspids.

A—From the epithelial cord of the corresponding temporary teeth,

116—Name the place of origin of the bicuspid.

A—From the epithelial cord of the corresponding temporary molars.

117—Name the place of origin of the first permanent molars.

A—From the epithelial lamina.

118—Name the place of origin of the second permanent molars.

A—From the epithelial cord of the first molars.

119—Name the place of origin of the third molars.

A—From the epithelial cord of the second molars.

120—At what period do the enamel organs of the permanent teeth make their appearance?

A—The enamel organs of the ten anterior teeth make their appearance about the sixteenth week of gestation.

121—At what period do the enamel organs of the first permanent molars make their appearance?

A—About the fifteenth week of gestation.

122—At what period do the enamel organs of the second molars make their appearance?

A—About the third month after birth.

123—At what period do the enamel organs of the third molars make their appearance?

A—About the third year.

124--Name the period at which the dental bulbs or germs of the ten anterior teeth appear?

A—About the twentieth week of gestation.

125—Name the period at which the dental bulbs or tooth germs of the first, second, and third molars appear?

A—First molars about the seventeenth week of gestation. Second molars during the first year. Third molars after the sixth year.

126--Name the period of closing the follicles and rupture of the cords of the ten anterior teeth.

A—About the eighth or ninth month.

127—Name the period of closing of the follicles and rupture of the epithelial cords of the first molars.

A—About the twentieth week of embryonic life.

128—What are ameloblasts?

A—The cells employed in the formation of enamel.

129—How is the enamel formed?

A—The enamel is formed by the ameloblasts or enamel cells; the enamel rod taking the form of the cell, which in its formation becomes hexagonal, and the lime salts of the adjoining cells during calcification mingle together. The cells have no cell wall.

130—What are odontoblasts?

A—The cells employed in the formation of dentine, dentinal cells; the larger cells are formed upon the periphery of the pulp; the odontoblast cells throw out processes from their extremities and the lime salts are deposited around these processes. The dentine is supplied with a fine net work of pulp or dentinal fibers.

131—What are osteoblasts?

A—Cells employed in the formation of bone and cementum.

132—Is cementum formed similar to dentine?

A—No, cementum is not formed by the tooth pulp, but directly from the connective tissue surrounding the roots of the teeth.

133—At what period does calcification of the permanent teeth commence?

A—About the twenty-fifth week of gestation.

134—Which are the first of the permanent teeth to calcify?

A—The first molars.

135—At what period do the incisors commence to calcify, and when is calcification complete?

A—About one year after birth, and is completed the tenth year.

136—At what period do the cuspids commence to calcify, and when is calcification complete?

A—About the second year and is completed the twelfth year.

137—At what period do the bicuspid commence to calcify, and when is calcification complete?

A—About the fourth year, and is completed the eleventh or twelfth year.

138—At what period do the second molars commence to calcify, and when is calcification complete?

A—About the fifth year, and is completed the sixteenth year.

139—At what period do the third molars commence to calcify, and when is calcification complete?

A—About the eighth year, and is completed the eighteenth or nineteenth year.

140—Name the period of time it requires to complete calcification of a permanent tooth.

A—From ten to twelve years.

## PART III.

### DENTAL PATHOLOGY AND THERAPEUTICS, CARE OF CHILDREN'S TEETH AND MISCELLANEOUS QUESTIONS.

141—What is pathology?

A—That branch of science which treats of the nature of diseases.

142—What is dental pathology?

A—That branch of science which treats of the nature of dental diseases.

143—What is therapeutics?

A—The science of medicine and remedies employed in the treatment of diseases.

144—What is dental therapeutics?

A—The science of medicine and remedies employed in the treatment of dental diseases.

145—What is life?

A—Life is the expression of force; the period between birth and death.

146—What is the first thing to do in treating diseases?

A—To remove the cause, and to know the difference between normal and abnormal structure.



147—If the pulp of a tooth should die before calcification is completed, what would be the result?

A—After the pulp loses its vitality, calcification ceases.

148—If the pulp of the first permanent molars should be destroyed about the seventh or eighth year, what would be the result?

A—The roots would not be properly developed; the first molars commence to calcify about the twenty-fifth week of foetal life; the crowns are fully calcified about the fifth year, and the roots are completed about the ninth year; so if the pulp dies before the ninth year the roots will not be completed, and will look as though absorption had taken place.

149—What would be the result should the pulp be destroyed before calcification is complete?

A—The roots would not properly develop.

150—Are the temporary teeth divided into classes?

A—Yes, first, the incisors; second, the cuspids; third, the molars.

151—Are the permanent teeth divided into classes?

A—Yes, first, the incisors; second, the cuspids; third, the bicuspids; fourth, the molars.

152—Name the periods of eruption of the deciduous teeth.

A—Central incisors, five to eight months after birth.

Lateral incisors, seven to ten months after birth.

First molars, twelve to sixteen months after birth.

Cuspids, fourteen to twenty months after birth.

Second molars, twenty to thirty months after birth, and some times as late as the thirty-sixth month.

153—At what periods are the deciduous teeth normally shed?

A—Central incisors, sixth to eighth year.

Lateral incisors, seventh to ninth year.

First molars, ninth to tenth year.

Cuspids, eleventh to thirteenth year.

Second molars, tenth to twelfth year.

154—Name the periods of eruption of the permanent teeth.

A—First molars, fifth and a half to sixth year, before the temporary teeth are normally shed.

Central incisors, sixth to eighth year.

Lateral incisors, seventh to ninth year.

First bicuspid, ninth to tenth year.

Second bicuspid, tenth to twelfth year.

Cuspids, eleventh to thirteenth year.

Second molars, twelfth to fourteenth year.

Third molars, sixteenth to twenty-fifth year.

155—Do the lower teeth precede the upper ones in their eruption ?

A—Yes, a few weeks.

156—Why are the first molars oft-times classed as temporary teeth ?

A—On account of erupting at an early period while all the temporary teeth are in place. Parents should be instructed by the dentist in this matter.

157—How should they be instructed ?

A—There are twenty teeth in the temporary set, ten to each jaw. Commence at the central incisors and count five each way, and all back of that number are permanent teeth. There are no supernumerary teeth in first dentition.

158—Class the teeth in the order in which they generally decay.

A—First, the first molars ; second, the second molars ; third, the superior lateral incisors ; fourth, the superior bicuspid ; fifth, the superior central incisors ; sixth, the third molars ; seventh, the cuspids. The ten anterior lower teeth are generally the last to be affected with caries.

159—Are teeth apt to be affected by caries at one period of life more than another ?

A—It is generally considered that from the fifth to the eighth year, and from the twelfth to the twentieth year, they suffer more from caries than at any other period.

160—What are the prime organs of mastication?

A—The teeth.

161—A tooth is composed of how many structures?

A—Four distinct structures.

162—Name them.

A—The pulp, dentine, enamel, and cementum.

The pulp, occupying the center of the tooth, is the life of the dentinal organ, although a tooth may be retained apparently in a normal condition without the pulp supply, from the surrounding tissue. The dentine constitutes the principal part of the tooth. The enamel, a hard dense structure, forms the covering of the tooth. The cementum covers the roots of the teeth, and is endowed with power of formation and protection independently of the pulp.

163—Are the temporary and permanent teeth similar in structure?

A—Yes, but the temporary teeth are not so dense in structure, and the pulp canals are larger in proportion.

164—Should teeth be extracted during pregnancy?

A—No, not as a general rule; except in certain cases where the offending member is disturbing and exciting the system more than that of the removal of the tooth.

165—Is it prudent to fill teeth as a rule during pregnancy?

A—No, not as a general practice.

166—Should anæsthetics be administered during pregnancy?

A—No, not as a rule; it might cause serious trouble at certain periods.

167—What anæsthetics should be recommended?

A—Nitrous oxide gas, or ether.

168—Which is generally considered preferable, nitrous oxide gas, or ether?

A—Nitrous oxide gas.

169—Is chloroform advisable for an anæsthetic in dental operations?

A—No, we do not consider chloroform safe, its tendency being to weaken the heart's action.

170—How should nitrous oxide gas be administered?

A—In administering gas the patient should be instructed to loosen all clothing, so that there will be no difficulty in breathing. The patient should be seated in a reclining chair, the prop should be properly applied in the mouth to admit of ample room to operate. When all is in readiness, the operator should instruct the patient that all is well, and to submit to the action of the gas and not make any demonstrations whatever. The air in the rubber tube and outfit should all be forced out before the patient commences to inhale the gas. The rubber hood should fit the face so as to exclude all air. After the patient has breathed a few

times through the inhaler, the gas should be let on. Not a word should be spoken during the operation, and in most cases from thirty to forty-five seconds are all that will be required to produce anæsthesia; the respiration should be closely watched and as soon as the anæsthetic stage is reached, which is easily observed by the condition of the eye and respiration, the inhaler should be removed, and the operation performed as soon as possible. All instruments should be in readiness before the gas is administered. We have never had an unfavorable symptom with gas, but we administer it with great caution. It is best not to administer gas if the patient is in an excited condition, but generally a few minutes conversation will remove all fear, and he will submit without a struggle. When the patient is unruly and difficult to manage it is generally the fault of the operator in not understanding the action of the gas, and the temperament of the patient.

171—Of what is enamel composed?

A—Organic and inorganic matter.

172—Give the proportions of organic and inorganic matter in enamel.

A—Organic matter, 4.78; inorganic matter, principally calcium phosphate, 95.22.

173—Give the analysis of enamel.

A—Calcium phosphate and fluoride,	-	85.73
Calcium carbonate,	- - -	6.62
Magnesium phosphate,	- -	1.95
Other salts,	- - - - -	.92
Cartilage and fat,	- - -	4.78

174—Of what is dentine composed?

A—Organic and inorganic matter.

175—Give the proportions of organic and inorganic matter in dentine.

A—Organic matter, 21.00; inorganic matter, 79.00.

176—Give the analysis of dentine.

A—Calcium phosphate and fluoride,	-	67.54
Calcium carbonate,	- - - -	7.98
Magnesium phosphate,	- - -	2.48
Salts,	- - - - -	1.00
Cartilage and fat,	- - - -	21.00

177—Of what is cementum composed?

A—Organic and inorganic matter.

178—Give the proportion of organic and inorganic matter in cementum.

A—Organic matter, 32.24; inorganic matter, 67.76.

179—Give the analysis of cementum.

A—Calcium phosphate and fluoride,	-	58.71
Calcium carbonate,	- - - -	7.24
Magnesium phosphate,	- - -	1.00

Salts,	-	-	-	-	-	-	.81
Cartilage and fat,	-	-	-	-	-	-	32.24

180—Of what is bone composed ?

A—Organic and inorganic matter.

181—Give the proportions of organic and inorganic matter in bone.

A—Bone is similar to tooth structure, composed of about the same material, but differently proportioned; organic matter 33.30; inorganic matter 66.70.

182—Give the analysis of bone.

A—Calcium phosphate,	-	-	-	51.00
Calcium carbonate,	-	-	-	11.34
Calcium fluoride,	-	-	-	1.99
Magnesium phosphate,	-	-	-	1.17
Soda and chloride of sodium,	-	-	-	1.20
Gelatin and blood vessels,	-	-	-	33.30

183—Give the different proportions of the organic matter in enamel, dentine, cementum and bone.

A—Enamel, 4.78 ; dentine, 21.00 ; cementum, 32.24 ; bone, 33.30.

184—Give the different proportions of the inorganic matter of enamel, dentine, cementum, and bone.

A—Enamel, 95.22 ; dentine, 79.00 ; cementum, 67.76 ; bone, 66.70.



185—Does the proportion of organic and inorganic matter in bone differ at different periods of life?

A—Yes.

	CHILD.	ADULT.	OLD AGE.
Organic matter,	49.32;	33.30;	14.33.
Inorganic matter,	50.68;	66.70;	85.67.

186—Does the proportions of organic and inorganic matter in tooth structure differ at different periods of life?

A—Yes, a tooth increases in inorganic matter.

187—What is understood by absorption of the roots of the deciduous teeth?

A—To take up and remove the calcified portion of the roots of the teeth. Absorption is a vital process and cannot take place in dead bone or dead tooth structure.

188—Will absorption take place after the pulp of a tooth has been destroyed?

A—It is generally believed that absorption of the dentine will not take place after the pulp loses its vitality.

189—Will it affect the vitality of the cementum if the pulp of a tooth is destroyed?

A—No, not as a rule. When it does not affect the cementum that portion of the root will absorb.

190—Will absorption of the roots of the deciduous teeth take place without the pressure of the advancing permanent teeth?

A—Yes, absorption takes place by absorbent cells, and not by the pressure of the permanent teeth. Sometimes the pressure will cause an inflammation and be a hindrance instead of an advantage. We frequently find the roots of the deciduous teeth entirely absorbed, where the permanent teeth fail to appear.

191—Is it advisable to destroy the pulp of a deciduous tooth?

A—Not as a general practice, although it may be done without harm at certain periods.

192—At what period is it advisable, if found necessary to destroy the pulp of a deciduous tooth?

A—After calcification is completed, and before the roots commence to decalcify. The central incisors are completely calcified about the eighteenth month, and commence to decalcify about the fourth year. So that during the period between the eighteenth month and the fourth year, the pulps of the central incisors may be destroyed without harm, except that it will prevent absorption of the dentine of the roots of the teeth. The second deciduous molars are fully calcified about the twenty-second month, and their roots commence to decalcify about the eighth year, so that during the period from the twenty-second month to the eighth year the roots of the second molars are fully formed and retained.

193—Does the eruption of the deciduous teeth ever cause any disturbance?

A.—Yes, but where nature is not over balanced by some abnormal action the progress of absorption is followed with but little disturbance. When absorption of the gum and dilatation of the neck of the sac keep pace with the growth of the tooth the pressure is hardly perceptible. But when these functions have been over-balanced and do not harmonize, we sometimes have abnormal symptoms.

194—What is dilatation?

A.—Dilatation is the process of expanding, etc.

195—What would be the treatment where we have local irritation, during the eruption of the deciduous teeth.

A.—By rubbing the finger on the gum, over the point of the advancing tooth, or letting the child have some hard substance to bite or press its gums against.

196—Would you advise the use of the lance to assist the eruption of the teeth?

A.—Sometimes the lance is advisable; by making a little cross incision in the gum over the point of the tooth. But the lance is seldom required.

197—Do we ever have any alarming symptoms during the eruption of the teeth?

A—Yes, the child may be troubled with diarrhœa, convulsions, fever, etc.

198—What would be the treatment when a child has convulsions during the eruption of the teeth? \*

A—Place the child in a warm bath. The cause of convulsions is generally an increased flow of blood to the brain.

199—Do we ever have an increased flow of saliva during dentition?

A—Yes.

200—Where we have an increased flow of saliva and it irritates the lips and face, in what condition do we find the secretions of the mouth?

A—Generally in an acid condition.

201—What is the general cause of dental caries? \*

A—Caries of teeth are generally caused by chemical decomposition of the lime salts.

202—What acids are the most destructive to tooth structure?

A—Nitric, sulphuric, hydrochloric and lactic acids.

203—Which acids are most frequently found in the mouth?

A—Hydrochloric and lactic acids.

204—What is the condition of a carious tooth where nitric acid is present?

A—Soft white decay, and sensitive, nitric acid de-

\* See Appendix.

stroys both the organic and inorganic structure.

205—What is the condition of a carious tooth where sulphuric acid is present?

A—Black decay, which is not as common as other varieties and slower in progress.

206—What is the condition of a carious tooth where hydrochloric acid is present?

A—Brown decay, this acid destroys the lime salts of the tooth, leaving the organic portion which can be removed in layers from the cavity.

207—What is the condition of a carious tooth where lactic acid is present?

A—Generally light decay, but not so sensitive as where nitric acid is the cause.

208—Is dental caries a disease?

A—It is claimed by some writers not to be a disease of itself, but is generally caused by an abnormal condition of the secretions of the mouth.

209—With how many sets of teeth is man endowed?

A—Two, a temporary and a permanent set.

210—Are all animals and reptiles limited to two sets of teeth?

A—No; some long-lived animals, as the elephant, etc., require several series of teeth.

211—With how many sets of teeth is the elephant endowed?

A—Six sets, or series of molar teeth, classed as three temporary and three permanent molars.

212—Describe an elephant's tooth.

A—It has a broad surface, with several transverse plates or sections composed of enamel, dentine, cementum, and pulp; a full-sized tooth is about three inches in width, and from six to ten inches in length.

213—How many molar teeth has the elephant during each dentition?

A—Four molars, two to each jaw. They make their appearance from behind forward, and as one series of teeth are worn out and the roots absorbed, another series of molars are making their appearance, and the anterior portion of the tooth is oftentimes considerably worn down before the posterior surface is erupted or fully developed.

214—With how many sets of teeth is the crocodile endowed?

A—Three.

215—Describe their formation and eruption.

A—Each successive tooth is formed at the base or root of the preceding tooth. As the new tooth advances absorption takes place and the old tooth is often carried off like a cap on the crown of a newly developed tooth.

216—Describe the crocodile's teeth.

A—They are cone shaped; the third and ninth tooth in the upper jaw and the first, fourth

and eleventh tooth in the lower jaw are much larger than the remainder of the teeth.

217—Has a young crocodile as many teeth as one full grown?

A—Yes.

218—Do the poison fangs of a serpent project normally as they do when it is defending itself?

A—No; they rotate in their sockets, the points drop back in the mouth normally; they are thrown forward when ready for battle. The poison canal is separate and distinct from the pulp canal. During excitement the poison is thrown from a sac at the base of the tooth through a small canal that opens near the point of the tooth.

219—How many bones in the human skeleton?

A—Two hundred and four.

220—How many bones in the head?

A—Twenty-two.

221—How many cranial bones?

A—Eight.

222—How many facial bones?

A—Fourteen.

223—How many superior maxillary bones?

A—Two.

224—How many superior maxillary bones in embryonic life?

A—Four, two maxillary and two inter-maxillary bones.

225—When are these bones united as two maxillary bones?

A—Before birth.

226—How are the teeth classified in the superior maxillary bones in embryonic and foetal life?

A—The central and lateral incisors are developed and supported in the inter-maxillary bones; and the cuspids and the first and second molars are developed and supported in the maxillary bones.

227—How many inferior maxillary bones?

A—One; a single bone in the adult, but consists of two separate bones during embryonic life.



## TEMPERAMENTS.

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228—What is understood by temperament?

A—Temperament means constitutional peculiarities.

229—Is the study of temperament of importance to the dentist?

A—It is of great importance.

230—Why is the study of temperament so important?

A—Because it would be difficult to select artificial teeth to harmonize with the individual if his temperament were ignored.

231—Is the study of temperament important in operative dentistry?

A—It is. If the operator can distinguish temperaments, he can readily decide what filling material will best preserve the patient's teeth.

232—How many basal temperaments are there?

A—Four.

233—Name them.

A—Bilious, sanguine, lymphatic, and nervous temperaments.

\* See Appendix.

234—Describe a person of bilious temperament.

A—Spare, angular development; characterized by a preponderance of bile; dark sallow complexion; hair and beard dark; eyes dark; lips purple; teeth of a yellowish color, rather narrow at the neck; articulation firm and close. Gold and tin-foil are good filling materials.

235—Describe a person of sanguine temperament.

A—Generally well developed; fair complexion; hair light brown; eyes blue or gray; full red lips; teeth cream color, average in size, about the same at the neck as at the cutting edge, with rounded cusps; gums round and full; articulation moderately firm; the jaw inclines to rotate in masticating. Diseases are prone to an acute form in this temperament. Gold and tin-foil are comparatively good filling materials.

236—Describe a person of lymphatic temperament.

A—Bulky development, looseness of tissue tending toward feebleness; skin pallid; hair either light or dark, thin and straight; eyes light or dark; clear mind; circulation feeble; weak pulse; teeth dark rather clouded in appearance, large and broad with thick and rounded cusps; articulation loose and flat. Gold, tin-foil and plastic filling materials are moderately good.

237—Describe a person of nervous temperament.

A—Body slender, generally well formed; light

complexion; muscles small and yielding; nervous, quick and excitable; hair light or dark; teeth long, decidedly narrower at neck than at cutting edge, pearl blue or gray, with long cutting edge, and prominent cusps; articulation close and penetrating. Gold, tin-foil and cements are comparatively good filling materials.

238—How many sub-temperaments are there?\*

A—Twelve.

239—Name them in classes as they should appear dentally.

A—1. Bilio-sanguine.	3. Sanguo-lymphatic.
Sanguo-bilious.	Bilio-nervous.
2. Lymphatico-sanguine.	Sanguo-nervous.
Lymphatico-bilious.	Lymphatico-nervous.
Nervo-bilious.	4. Bilio-lymphatic.
Nervo-sanguine.	Nervo-lymphatic.

240—Why are the sub-temperaments divided into four classes, and what are the characteristics of each class?

A—They are divided according to quality. 1st, Excellent; 2d, Good; 3d, Doubtful; 4th, Bad.

241—Describe a person of bilio-sanguine temperament.

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\*Partially taken from Prof. Flagg, and Dr. Ingli's questions and answers of Dental Pathology and Therapeutics.

A—Above average in size; broad shoulders, full chest, strong and well built; head well developed; hair dark and generally wavy; eyes large, dark and expressive; teeth dark cream color, average in size, good in structure, and not very sensitive; rounded arch. Gold and tin-foil are excellent filling materials.

242—Describe a person of sanguo-bilious temperament.

A—Above average in size; dark complexion; hair dark or black; large mouth; teeth yellow, large and angular, good in structure, and not very sensitive; flat arch; cuspids prominent. Gold and tin-foil are excellent filling materials.

243—Describe a person of lymphatico-sanguine temperament.

A—Above average in size; solid in structure; high instep; small hands and feet; skin soft and smooth; fair complexion; hair brown and inclined to curl; eyes blue and expressive; mouth medium size; pink lips; teeth grayish cream color, average size, strong and good texture, not very liable to decay; rounded arch. Gold and tin-foil are good filling materials.

244—Describe a person of lymphatico-bilious temperament.

A—Considerably above average in size; skin dark, tendency to freckles, moles, etc.; hair dark and wavy; eyes dark; large mouth; lips firmly set; teeth yellowish in color, short and thick, having heavy edges and cusps; medium in

structure; cuspids prominent. Gold and tin-foil are medium filling materials.

245—Describe a person of nervo-bilious temperament.

A—Less than average size; small muscular development; small waist and tapering limbs; small feet and hands; dark complexion; small head and high forehead; hair generally brown; eyes dark brown; mouth average size; lips purple; teeth bluish yellow, long and narrow, much broader at cutting edge than at neck; quite rapid to decay; cuspids prominent; arch narrow. Gold is a medium filling material, tin-foil and plastic materials are advisable.

246—Describe a person of nervo-sanguine temperament.

A—Above average in size; well built, broad shoulders; fair complexion; hair generally red; mouth average size; red lips; teeth cream color, average size; rounded arch; eyes blue or hazel. Gold and tin-foil are good filling materials, plastic materials are sometimes preferable.

247—Describe a person of sanguo-lymphatic temperament.

A—Above average in size; full development; fair complexion; cheeks full; high forehead; hair dark or medium in color; eyes light; large mouth; red lips; teeth cream color, large and broad, decay rapidly; rounded arch. Gold a

medium filling material, tin-foil and plastic materials are often preferable.

248—Describe a person of bilio-nervous temperament.

A—Less than average in size; dark complexion; broad forehead; chin and jaw small; hair varies in color, generally red or brown; eyes small, varying in color from brown to almost black, which twinkle when pleased or snap when angry; teeth bluish tinge, vary in size, generally long with narrow necks, poor in structure, decay rapidly. Tin-foil and plastic filling materials are often preferable to gold.

249—Describe a person of sanguo-nervous temperament.

A—Less than average in size; fair complexion; hair light; eyes blue or gray; teeth bluish cream color, average size, long and narrow at neck, medium in structure; narrow arch; mouth medium size, full lips. Gold should be used with care for fillings, tin-foil and plastic materials are advisable.

250—Describe a person of lymphatico-nervous temperament.

A—Average in size; dark or light complexion, but generally devoid of freshness and color, especially in young life; broad high forehead; chin small and well formed; hair medium in color, generally straight; thin, scattering beard; eyes gray; teeth of a bluish tinge, average size and well proportioned, sensitive and

below average in structure, decay rapidly, and are very liable to irritation of the pulp. Tin-foil and plastic filling materials advisable.

251—Describe a person of bilio-lymphatic temperament.

A—Decidedly above average in size; bulky and awkward; void of beauty; large forehead but not very intellectual; dark straight hair; eyes dark; mouth large; generally dark complexion; teeth large and bulky, yellowish in color, decay rapidly, but not very sensitive. Tin-foil and especially plastic materials are preferable for fillings.

252—Describe a person of nervo-lymphatic temperament.

A—Average in size and development; void of beauty; light complexion; hair straight and medium in color; eyes gray inclining either to green or hazel; mouth average size; teeth cream color, average size, soft and decay rapidly; rounded arch. Plastic filling materials are preferable.

253—What is understood by the first, middle and last third of the crown of a tooth?

A—The crown of a tooth is divided into thirds, the first third commencing at the cutting edge or grinding surface of the tooth.

254—Should deciduous teeth be extracted?

A—Extracting deciduous teeth is seldom required. If they are kept in a normal condition, nature

will absorb their roots so that nothing remains but the crown simply attached to the gum. But where parents neglect to have their children's teeth cared for, and they are allowed to decay, waste away, and lose their vitality by the death of the pulp; nature will fail to accomplish her work, absorption will not properly take place, and the teeth will have to be extracted.

255—Should deciduous teeth be filled ?

A—Yes, they should be treated and filled when found necessary, and retained until they are normally shed.

256—Why is it necessary to fill deciduous teeth and retain them normally, when they are to be replaced by permanent ones ?

A—For several reasons; the child needs the deciduous teeth to masticate its food; to assist it in articulating words; to expand and develop the jaw and prevent irregularity.

257—Do the deciduous molars occupy a very important position ?

A—Yes, they should always be retained until about the eighth or tenth year. If the second molars are extracted at an earlier period, the first permanent molars will generally lean forward, and the bicuspid, which should occupy the space of the deciduous molars, will be thrown out of their proper position.



258—How would you proceed to gain the confidence of children?

A—Treat your little patients kindly, be honest with them, and you will soon gain their confidence. An office should be made attractive and home-like, so that the patient will not have that dread and fear which frequently appear at such places. The dentist and parents are generally the cause of children dreading a dental office, or a dental operation. How often we have seen children forced into a dental office, and compelled to have those precious little organs removed, previous to their normal period, on account of ignorance or carelessness of their parents, and oftentimes the dentist is as much at fault as the parents. Children are human beings; they sometimes forgive, but never forget, when they have been wrongly treated.

If the child has been properly taught at home it will go to a dental office as willingly and cheerfully as though it were going out shopping. An office should not be a place of dread, but made attractive. A chattering bird, a window of beautiful plants, and appropriate paintings on the wall, all have a tendency to assist in gaining the confidence of the child, and your conversation should be in accordance with the temperament of the patient. Children are sensitive beings and must be treated accordingly. Make engagements with them, if you do but little more than examine

their teeth, and you will soon gain the confidence of timid children.

259—How should an abscess-tooth, or pulpless deciduous tooth be treated?

A—The deciduous teeth should be treated and filled similar to permanent ones. The pulp canals of deciduous teeth are larger in proportion than those of the permanent ones.

If the temporary teeth are neglected and allowed to decay in early childhood the nerves will generally die, and if the root canals are allowed to remain unfilled, an abscess usually follows. We have often examined children's teeth and found them badly diseased with abscesses, discharging pus into the mouth, which is finally carried into the stomach to do its destructive work.

The first thing to do in such cases is to open the pulp chamber, syringe out with an antiseptic, and if the tooth is painful to the touch, it should not be further operated on until soreness subsides; but if not sensitive to the touch it should be treated further at once, all decay should be removed from the cavity, the pulp chamber thoroughly cleaned, and washed out with peroxide of hydrogen, with Dr. Dunn's medical syringe, until all bubbling ceases, then use a five per cent. solution of carbolic acid or a solution of carbolic acid one part; oil of cassia two parts; oil of winter-green three parts; the pulp cavity should then be filled with

floss silk saturated with the five per cent. solution of carbolic acid, or last mentioned medicine, (known as one, two, three preparation). The cavity should be sealed with some temporary stopping to prevent the oral secretions from entering. Use floss silk instead of cotton in the treatment of root canals, as it is much easier removed. Have the little patient return in two or three days after the treatment, and in most cases the tooth will be in a condition for filling.

260—Should the rubber dam be used in filling deciduous teeth?

A—It is often difficult to use the rubber dam, as the operation should be speedily performed. Where it is difficult to use the rubber dam, napkins about six inches square can be used by folding and placing on each side of the tooth, slip a large clamp over the tooth and down on the edge of the napkins, so as to hold all in place.

In filling, the pulp canals should be thoroughly dried, and filled with chloro-percha, about the consistency of cream, which is made by dissolving red gutta-percha in chloroform. This is used by wrapping a few fibers of cotton around a small nerve broach and saturating it with the chloro-percha, and filling the root canals by pumping the broach back and forth, which will force the material to the apex of the root. After the root canals have been filled with the chloro-percha, it can be forced

to every part of the tooth by using gutta-percha cones and pressing them into the cavity with a warm instrument. The cavity should be filled with some plastic filling material.

261—Should gold be used for filling deciduous teeth?

A—No, gutta-percha, cements, and amalgam are preferable. A mixture of cement and amalgam is very good for filling deciduous molars.

262—At what period of life may the extraction of six year molars cause the least harm?

A—From the tenth to the twelfth year, or near the period of the eruption of the second molars. If the first molars are extracted at an earlier period the second molars will tilt forward and interfere with proper occlusion of the teeth.

263—Is it advisable to extract the first permanent molars?

A—No, except where we find them badly broken down before the tenth or twelfth year.

264—What is the most simple mode of regulating the permanent teeth?

A—By the use of rubber bands, made of gold, silver, or copper, a band to fit the tooth from an eighth to a sixteenth of an inch in width. It should be made with a grooved surface. After the metallic band is properly fitted to the tooth, the rubber band should be stretched over the tooth into the groove of the metallic band, which will prevent the rubber from

crowding the gum. All teeth over which the rubber passes should have a metallic band. The force can be applied at the first, middle or last third of the tooth, just as the metallic bands are applied, the force and strength depend on the width of the rubber bands.

265—Define irritation.

A—The condition of an organ or tissue in which exists an excess of vital action, or the slightest foreign influence affecting the functions of the body.

266—Define hyperæmia.

A—An increased flow of blood to any particular part caused by irritation.

267—Define congestion.

A—Distension of vessels, accumulation or stoppage of blood, by an increased action.

268—Define inflammation.

A—Inflammation is a term implying a whole series of processes, partly vascular, and partly textural, and these processes admit of a great variety of combinations. We have certain characteristics of inflammation, but the whole contents of the term cannot be fully indicated without describing briefly the processes to which the term applies.

269—What are the four cardinal symptoms of inflammation?

A—The four cardinal symptoms of inflammation are well recognized, namely, redness, swelling, pain, and heat, with impaired functions.

270—What is the cause of the redness?

A—The redness is from increased flow of blood to the part.

271—What is the cause of the swelling?

A—The swelling is due to an increased volume of blood in the parts, and after a time the swelling is increased from exudation.

272—What is the cause of the pain?

A—The pain is caused by the swollen condition of the parts which causes pressure upon the sensory nerve filaments, or by chemical irritation.

273—What is the cause of the heat?

A—The heat comes from the excessive flow of blood through the parts in the stage of hyperæmia.

274—What changes do we have in inflammation?

A—In inflammation we have both vascular and textural changes.

275—What produces the vascular changes, and what does it cause?

A—The vascular change is produced by some irritation, which, being applied, causes a general dilatation of the vessels, first of the arteries, then of the capillaries and veins.

276—What takes place during the stage of hyperæmia?

A—The flow of blood through the widened channels is more rapid at first; this is the stage of hyperæmia.

277—What takes place during the stage of congestion?

A—After a time the speed diminishes and at length the flow of blood becomes slower than in the normal condition. This constitutes the stage of congestion. During this stage we have a migration of the blood corpuscles through the walls of the veins and capillaries into the surrounding tissue, but not from the arteries.

278—What takes place during the stage of exudation?

A—Associated with the passage of the corpuscles there is always an escape of liquid which is comparatively rich in albumen. This is the stage of exudation or infiltration.

279—What produces these changes and stages?

A—All these changes and stages depends upon a molecular alteration in the walls of the blood vessels.

280—What other changes take place besides molecular change?

A—The inflammatory changes in the blood vessels must of necessity be associated with tissue changes. These changes vary with the nature of the exciting cause, irritant, and with the intensity of the inflammation, the character and extent of the vascular disturbance, and with the nature of the tissue. Inflammation cannot exist without molecular death.

281—Describe the difference between a normal and abnormal pulp of a tooth.

A—A normal pulp has a grayish white appearance and the capillaries are not visible to the naked eye; but an abnormal or inflamed pulp is of a bright red color.

282—What are the symptoms of an inflamed pulp?

A—The unyielding walls of the pulp chamber, in which it is enclosed on all sides, renders expansion of the soft tissue impossible, causing at first constant gnawing pain, and as the distention of vessels increases, it becomes a severe, deep-seated, and throbbing pain; almost unbearable.

283—Are sound teeth ever affected with inflammation of the pulp?

A—Yes, by mechanical violence, or foreign substances collecting on the roots of teeth.

284—What is the usual cause of inflammation of the pulp?

A—Caries.



285—Where thermal changes affect a tooth that is filled with gold or any metallic substance, what is the general result?

A—Where a metallic filling comes in contact with sensitive tooth structure, and is affected by heat and cold, the pulp may die.

286—How would you avoid metallic fillings coming in contact with sensitive dentine?

A—By using a non-conductor of heat and cold over the sensitive part.

287—What materials are used for non-conductors, and for capping sensitive structure?

A—Cements, gutta-percha, etc.

288—Where a pulp dies from thermal changes, what are the symptoms?

A—The tooth seems a little elongated, sensitive to touch, constant pain, etc.

289—Give treatment where the pulps have died from thermal changes, or other causes.

A—Open into the pulp chamber so as to have free access to operate, remove all matter, syringe out with peroxide of hydrogen, and treat with an antiseptic.

290—What are antiseptics?

A—Antiseptics are those agents which prevent or retard septic decomposition, as peroxide of hydrogen, creosote, carbolic acid, bichloride of mercury, iodoform, etc.

291—What are astringents?

A—Astringents are agents which in their action produce contraction, and arrest hemorrhage or excessive secretions. Per-sulphate of iron, tannic acid, and alum are astringents generally used by dentists.

292—What are stimulants?

A—Stimulants are agents which excite functional action. Dental stimulants are creosote, cap-sicum, oil of cloves, etc.

293—What are disinfectants?

A—Disinfectants are medicines which neutralize, sterilize and purify the products of decomposition and putrefaction. Those used in dental practice are carbolic acid, peroxide of hydrogen, chloride of zinc, bi-chloride of mercury, sulphate of iron, etc.

294—What are escharotics?

A—Escharotics are agents which penetrate the surface and are capable of destroying the life of the tissue with which they come in contact, producing an eschar or sloughing of the parts, such as nitrate of silver, chloride of zinc, arsenic, etc.

295—What is an alveolar abscess?

A—A cavity containing pus, formed at the apex of the root of a tooth, produced by suppuration. A sac is formed of soft membranous tissue restraining the pus from the adjacent structure.

296—What is an ulcer?

A—An ulcer differs from an abscess in that the pus is not confined in a sac, but involves the surrounding tissue. It is superficial.

297—Give cause and treatment of alveolar abscess.

A—An alveolar abscess is caused by decomposition of the pulp, or by filling materials being forced beyond the root. Treatment, remove the cause, give free access to the disease by opening into the pulp chamber and through the apical foramen. If the abscess has a fistulous opening, use peroxide of hydrogen freely with Dr. Dunn's medical syringe, until the pus is all removed. A ninety-five per cent. solution of carbolic acid should be used to destroy the sac. Antiseptic treatment should be continued for a few days. If we have an incipient abscess the treatment is similar except the medicine used must be introduced and the pus must escape through the root canal.

298—Define pyorrhœa alveolaris. Give cause and treatment.

A—Pyorrhœa alveolaris is a discharge of pus around the necks and roots of the teeth, caused by foreign deposits and constitutional causes. Treatment, all salivary deposits should be removed and the surfaces thoroughly cleansed. Peroxide of hydrogen should be syringed well

under the margin of the gums, followed by applications of aromatic sulphuric acid reduced to about fifty per cent. This disease is seldom found before the twenty-fifth or thirtieth years of age.

299—Define abscess of the antrum of Highmore.  
Give cause and treatment.

A—The antrum of Highmore is situated in the body of the superior maxillary bones, above the roots of the superior bicuspid and first and second molars, and opens into the nose. This cavity varies in size. An abscess of the antrum is generally very painful, especially when the pus does not escape through the opening into the nose. The cause is generally from diseased teeth. Treatment, cut into the antrum through the socket of the second bicuspid or first molar, and syringe out with tepid water, then with peroxide of hydrogen, followed by a weak solution of chloride of zinc, and afterward a five per cent. solution of carbolic acid.

300—Define dental exostosis. Give cause and treatment.

A—Dental exostosis or excementosis is a morbid growth of cementum on the roots of the teeth, a hypertrophied condition of the cementum, caused by any irritation which stimulates the functional action of the periodontal membrane. Treatment, aconite and iodine equal parts bathed on the gum over the affected tooth will often

give temporary relief. The disease having established itself does not admit of cure. The pain from excementosis is often very severe, and extraction of the tooth is necessary. It never appears on the roots of deciduous teeth, and seldom affects the permanent teeth before the twentieth year of age, until calcification of the teeth is completed.

301—Describe the best method of arresting excessive hemorrhage after the extraction of teeth.

A—Take a small pellet of cotton, moisten with water, then roll it in powdered persulphate of iron or tannic acid, and pass it to the bottom of the alveolar cavity, and have the patient remain quiet.

302—What action has arsenic on a tooth pulp?

A—Arsenic is an escharotic, causing irritation and inflammation, and stops nutrition.

303—When arsenic is applied to a tooth pulp, how long does it require to cause devitalization?

A—From four to six hours arsenic will generally affect the pulp of a tooth so that it will lose its vitality in from four to six days following, and if the cavity is well sealed so that the arsenic cannot come in contact with the soft parts of the mouth, it may remain from four to six days without harm. The author generally lets the arsenic remain about twenty-four hours.

• See Appendix.

304—How soon should a pulp be removed after being devitalized?

A—The pulp should not be removed before the fourth to the sixth day after devitalization, as it would be difficult to remove the pulp in a body, and without causing pain, previous to that time.

305—Give the normal frequency of the heart during foetal life.

A—One hundred and forty beats per minute.

306—Give the normal frequency of the heart at birth.

A—One hundred and thirty beats per minute.

307—Give the normal frequency of the heart at one year of age.

A—One hundred and five beats per minute.

308—Give the normal frequency of the heart at the fifth year of age.

A—Ninety-five beats per minute.

309—Give the normal frequency of the heart at the tenth year of age.

A—Eighty-five beats per minute.

310—Give the normal frequency of the heart at the sixteenth year of age.

A—Eighty beats per minute.

311—Give the normal frequency of the heart of an adult.

A—Seventy-five beats per minute.

312—Give the normal frequency of the heart at old age.

A—Eighty beats per minute.

313—What are the normal constituents of the blood?

A—Red and white corpuseles,	-	138	parts
Fibrin,	- - - - -	4	“
Albumen,	- - - - -	72	“
Fatty matter,	- - - - -	3	“
Salts,	- - - - -	5	“
Water,	- - - - -	778	“
<hr/>			
			1000 parts

314—What is the time required for the passage of the entire mass of blood through the heart?

A—From twenty-five to fifty seconds, according to the rapidity of the heart.

315—What proportion of the weight of the body is the blood?

A—From one-eighth to one-tenth the weight of the body.

316—What is normal temperature?

A—About ninety eight and a half degrees.

317—What is salivary calculus?

A—It is lime salts that collects on the teeth, it frequently collects in large quantities upon

some teeth, while on others it is scarcely perceptible. It is composed of earthy salts and animal matter.

318—Give the analysis of salivary calculus.

A—Phosphate of lime,	-	-	-	62.00
Carbonate of lime,	-	-	-	12.00
Animal matter and mucus,	-	-		15.00
Water and loss,	-	-	-	11.00
				<hr/>
				100.00

319—Is the analysis of the different classes of salivary calculus the same?

A—No, hard dry tartar contains more earthy and less animal matter, so the analyses vary.

320—Does salivary calculus destroy tooth structure?

A—It seldom affects the tooth structure, but is very irritating to the gums, causing inflammation, and recession of the gums, and absorption of the alveolar process.

321—Where is salivary calculus most abundantly found?

A—Salivary calculus collects in the greatest quantities on the lingual surfaces of the lower incisors, and buccal surfaces of the upper molars.

322—Why does salivary calculus collect on the teeth in one part of the month more than another?



A—It collects more abundantly on some teeth because they are nearer the openings of the ducts of the salivary glands.

323—What is the treatment where salivary calculus is present?

A—It should be removed with instruments, and the surfaces of the teeth burnished. Acids should not be used in removing deposits from the teeth.

324—Is dentifrice an advantage to the teeth?

A—Yes, where salivary calculus is present. The following is a good dentifrice :

R—Precipitated chalk,	-	-	-	-	℥j.
Pul. orris root,	-	-	-	-	℥iv.
“ rose pink,	-	-	-	-	℥j.
“ pumice stone,	-	-	-	-	℥j.
“ sugar,	-	-	-	-	℥ss.
“ cinnamon,	-	-	-	-	℥ij.
Carb. soda,	-	-	-	-	℥j

Mix and reduce to an impalpable powder.



## APPENDIX.

Answer to question 33.

—By improper diet, care, and hereditary causes.

Answer to question 51.

—About the twentieth month.

Answer to question 62.

—Sometimes, but it seldom occurs. It is more apt to destroy the germs of the superior lateral incisors, and generally takes them in pairs.

Answer to question 66.

—It is a semi-circular fold of the mucous membrane, at an early period of the embryo, where the germs of the teeth are formed.

Answer to question 110.

—The membrane or connecting cord of the enamel organ and the epithelial lamina.

Question 104.

—What are columnar or infant cells?

Answer to question 198.

—Place the child in a hot bath, lance the gum, and follow up with therapeutical treatment.

Answer to question 201.

—Caries of the teeth are generally caused by an abnormal condition of the secretions of the mouth, or by the effects of micro-organisms.

Answer to question 231.

—It is. If the operator can distinguish temperaments, it will greatly assist him in deciding what filling material will best preserve the teeth.

303.

—If the arsenic should ooze out of the cavity and inflame the gum around the tooth, bathe the inflamed part with dialysed iron.



## INDEX TO QUESTIONS.

---

<b>A</b> meloblasts.....	128
Anæsthetics.....	166
Alveolar Abscess.....	295, 297
Alveolar Abscess Treatment.....	297
Abscess Deciduous Teeth.....	259
Absorption of Roots.....	187
Antiseptics.....	290
Astringents.....	291
Arsenic.....	302, 303
Antrum of Highmore.....	299
Acid, Nitric.....	204
Acid, Sulphuric.....	205
Acid, Hydrochloric.....	206
Acid, Lactic.....	207
Air, Composed of.....	7
Absorbent Cells.....	190
<b>B</b> one.....	180, 185, 219
Bone, Head.....	220
Bone, Cranial.....	221

Bone, Facial.....	222
Bone, Superior Maxillary.....	223
Bone, Inter-maxillary.....	226
Bone, Inferior Maxillary.....	227
Bone Analysis.....	182
Blood Analysis.....	313
Blood Rapidity of Circulation.....	314
Blood, Amount in the System.....	315
<b>C</b> alcification.....50, 51, 52,	53
Consumption, Hereditary.....	42
Consumption, Contagious.....	43
Cells, Infant.....	104
Cells, Columnar.....	104
Cells, Polygonal.....	105
Cells, Hexagonal.....	106
Chloroform.....	169
Caries.....201,	208
Convulsions.....	198
Congestion.....	267
Cementum Analysis.....	179
<b>D</b> ecalification.....54, 55, 56,	57
Disinfectants.....	293
Dental Bulb.....	108
Diarrhoea.....	24
Dentine Analysis.....	176
Dentifrice.....	324
<b>E</b> mbryology.....	44
Embryology, Dental.....	45

# INDEX TO QUESTIONS.

71

Embryo .....	84
Enamel Organ.....	64
Eruptive Diseases.....	58
Eruption of the Teeth .....	152, 154
Enamel Analysis.....	173
Ether.....	167
Escharotics.....	294
Exostosis.....	300
Extracting Deciduous Teeth.....	254
Extracting Teeth during Pregnancy.....	164
<b>F</b> ollicle .....	67
Fetal Life .....	85
<b>G</b> as Nitrous Oxide .....	167
Gas Nitrous Oxide, how administered.....	170
<b>H</b> ygience .....	1
Hygiene, Dental.....	2
Heart, its Normal Frequency .....	305 to 312
Health .....	3, 16
Hyperaemia .....	266
Hemorrhage.....	301
<b>I</b> ntemperance .....	19
Irritation .....	265
Inflammation .....	268
Incipient Abscess.....	297
<b>L</b> ancing Gums.....	196
Life .....	145
<b>M</b> eckel's Cartilage .....	76

Mucous Membrane.....	89
<b>N</b> erve Destroying.....	303
Nitrogen .....	11
<b>O</b> xygen.....	10
Ossification .....	75
Oral Epithelium.....	109
Odontoblasts .....	130
Osteoblasts .....	131
<b>P</b> athology.....	141
Pathology, Dental.....	142
Primitive Dental Groove.....	66
Phosphates—required daily.....	31
Papilla .....	68
Pyorrhœa Alveolaris.....	298
Pulp Treatment.....	289
Preparation, One, Two, Three.....	259
<b>R</b> ubber Dam.....	260
<b>S</b> aliva .....	199, 200
Stimulants .....	20, 292
Six Year Molars.....	262
Salivary Calculus.....	317
Salivary Calculus Analysis.....	318
Salivary Calculus Treatment.....	323
<b>T</b> emperature, Normal.....	316
Teeth, Normally Shed.....	153
Teeth, Elephant.....	211
Teeth, Crocodile.....	214



Teeth, Serpents .....	218
Teeth. Divided into Thirds.....	253
Teeth, Deciduous, Filling Materials.....	261
Teeth, Composed of how many Structures.....	161
Therapeutics .....	143
Therapeutics, Dental.....	144
Temperaments.....228, 233,	239
"    Bilious .....	234
"    Sanguine .....	235
"    Lymphatic .....	236
"    Nervous .....	237
"    Bilio-sanguine.....	241
"    Sanguo-bilious .....	242
"    Lymphatico-sanguine .....	243
"        "    bilious .....	244
"    Nervo-bilious .....	245
"        "    sanguine .....	246
"    Sanguo-lymphatic.....	247
"    Bilio-nervous.....	248
"    Sanguo-nervous .....	249
"    Lymphatico-nervous .....	250
"    bilio-lymphatic.....	251
"    Nervo-        "    .....	252
<b>U</b> lceration.....	296
<b>V</b> entilation .....	6
<b>W</b> heat Flour.....	30

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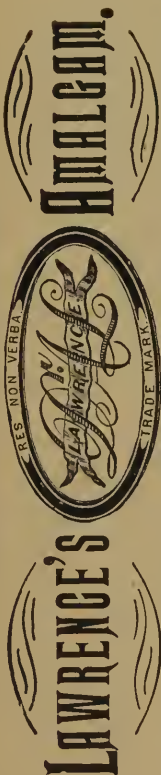
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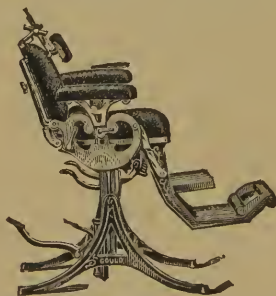
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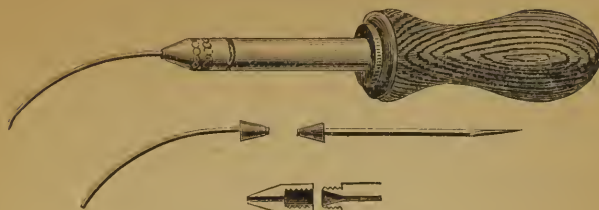
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